

Relaxing TPF System Requirements with an External Occulter

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The TPF Architecture Reviews selected a few techniques on which to focus further research and development. Although not among the top two choices, external occulter are compatible with several of the single-aperture approaches to a TPF system. Recent studies indicate that the reduction of incident star light provided by even a low-suppression opaque occulter can decrease the requirements on telescope and instrument optical-train quality to the point where useful contrast ratios can be achieved using existing (HST-like) optical systems. An external occulter can provide leverage towards technology development risk reduction, cost reduction, and higher system technology readiness levels in TPF development. This is a powerful argument that the community should re-evaluate the role of external occulter in the TPF roadmap. In this presentation we will review the studies that indicate an external occulter can relax optical system requirements for TPF, discuss some operational parameters for use of an external occulter with a single-aperture telescope, and outline the areas where an external occulter can increase feasibility and reduce risk or cost for TPF.

